Inside Wallops

National Aeronautics and Space Administration
Goddard Space Flight Center
Wallops Flight Facility, Wallops Island, Virginia | Volume XIX-99 | Number 11 | March 22, 1999

SpaceTalk *by Jim Lovell*

Space Program and the Economy: Onward and Upward!

As long as there has been a space program, there have been detractors. "What are we doing up in space when we've got real problems right here on earth?"

I welcome that question since it gives me a chance to list the multitude of innovations we use every day that were first developed for space exploration. That list keeps getting longer and longer. Just last week I used a new ear thermometer to check the temperature of a squirming grandchild. The handy device is based on metal coatings technology developed for space helmets.

Smoke detectors, hand-held vacuum cleaners, water filters and ergonomic furniture are just some of the many household items first developed for use in space. The highly efficient foam insulation used in new homes was first used to insulate fuel tanks on liquid-fueled rockets.

Portable X-ray machines, programmable pacemakers and many surgical tools were all pioneered as part of the space program. Concentrated baby foods as well as the freeze-dried instant mixes we feed our kids were first consumed in space. Many of the bio-feedback techniques used to reduce stress were first developed for use by astronauts.

Satellites have revolutionized telecommunications and the global positioning system (GPS) can help navigators on land, in the air or on the seas locate their position to within 10 feet anywhere in the world.

The list goes on and on. Studies have shown that for every dollar spent on space development, $7 has been returned to the economy in the form of a new product or service. But one space-program spin-off is paying dividends greater than anyone ever imagined.

While the economy in many parts of the world is in shambles, the U.S. economy keeps humming along. Americans are earning more money than ever before. Unemployment is at an all-time low and, amazingly, inflation is virtually nonexistent. Why is the American economy is so strong? Economists, not generally known for brevity, answer with a single word: productivity. Since 1990, productivity increases in the U.S. have averaged 2.1 percent each year.

Besides our fabled work ethic, what is it that makes American workers so productive? Computers. American workers know how to use computer technology to work better and smarter. You can thank the space program for those computers.

During the 1950s, computers were the size of a supermarket. To travel into space, however, we needed computers that could fit into a phone booth. Companies like Fairchild and Intel experimented with ways to reduce the size of computers. The result was the microprocessor.

Every one of the tiny computer chips found in personal computers, network servers, airplanes, manufacturing equipment, cars, toaster ovens, washing machines, toys, alarm clocks and thousands of other products can trace its heritage back to those integrated circuits first developed for the space program. Thirty-five years ago, critics called the newly invented microprocessors "novelties' and "toys." Today, the cost of developing these "toys" has been returned a billion-fold, if not more.

NASA accounts for a mere one percent of the federal budget - an amazingly small amount when you consider the profound effect the agency's work has had on the quality of our lives. Ironically, while the R&D budgets for other government agencies is increasing, NASA's continues to decline - this in spite of its extraordinary track record.

We must continue investing in technology and the space program. We should encourage our children to study math and science. If anything, we should invest more in science education. Standard & Poors DRI estimates that if our productivity and innovation continues at its present rate, real wages could rise by 9% over the next decade. Corporate earnings could rise as much as 54%.

Scientific growth means economic growth. The evidence is irrefutable. Let's not turn our backs on progress. There is still so much to discover - new medicines, new materials, new ways to protect the environment.

If I sound like I'm excited, I am. Who knows which new "toys" will revolutionize the way we live!

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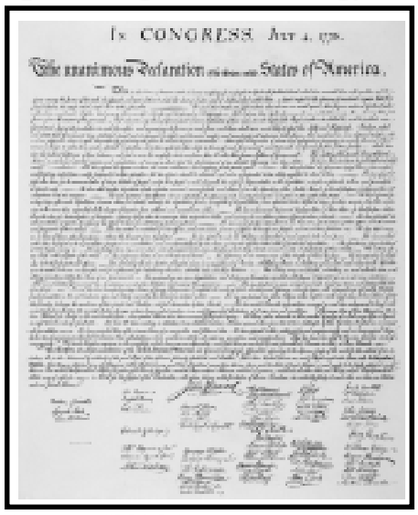
Jim Lovell, commander of the Apollo 13 lunar mission, is the founding Chairman of the Space Awareness Alliance's Advisory Board.

Space-Age Technology Peeks At American History



A team of NASA scientists working at the request of the National Archives has proved that the containers preserving several pages of the U.S. Constitution are still safely sealed.

Scientists from NASA's Langley Research Center adapted a laser system from an atmospheric research program to peer into the encasements protecting three of the five pages of the Constitution. By analyzing how the laser was affected by water vapor within the cases, the scientists determined the two middle pages of the Constitution and the transmittal page are still protected by their half-century-old helium and water vapor atmosphere.

In the early 1950s, the Declaration of Independence, the Constitution and the Bill of Rights, collectively known as the Charters of Freedom, were sealed in specially prepared containers.

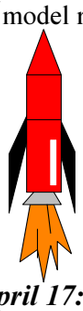
The cases were filled with humidified helium to protect the documents. When scientists beamed the laser into the cases, the water vapor inside partially absorbed the beam. By analyzing the absorption pattern, the scientists determined that the atmosphere had not changed.

In the next few years, the National Archives will replace the containers. First, however, the agency wanted to see how the old ones held up and contacted Langley with an intriguing scientific challenge: determine the composition of the atmosphere in the containers without breaking their seals. The team used an instrument developed by Langley researcher Glen Sachse, the Diode Laser Hygrometer, to effectively take chemical samples without unsealing the encasements.

The laser system is now headed to the South Pacific aboard a NASA DC-8 aircraft to help scientists understand how human activities affect the Earth's lower atmosphere. The Global Tropospheric Experiment (GTE) Pacific Exploratory Mission Tropics-B (PEM-Tropics B) is the most recent in a series of NASA airborne missions to study the atmospheric chemistry of the western and tropical Pacific Ocean regions. The Wallops P-3B aircraft also is supporting this mission.

NASA Visitor Center April Special Events

April 3: "Model Rocket Launch"



A model rocket launch will be held at 1 p.m. Models of various rockets will be launched. Model rocketeers are invited to bring their own rockets and launch them. The launch will be canceled if it is raining or winds exceed 18 mph.

April 17: " Kite Flight"

" Kite Flight" is the subject of a 1 p.m. program for children ages 5-10 years. The 40-minute activity will look at the history of flight and give an understanding of the various kinds of flight. The children will have an opportunity to construct and fly their own kite.

Saturdays and Sundays: "Puppets in Space"

"Puppets in Space", a 10-minute puppet show, will be presented at 11 a.m. on Saturdays and Sundays. Puppet astronauts and Sam the monkey will explore space flight, including the space suit. An eight-minute version of the film "Astrosmiles" follows the puppet show.

Sundays: "Humans in Space"

"Humans in Space" is the subject of a 1 p.m. program for children of all ages. The 30-minute program looks at living and working in space, including a review of the astronauts' culinary delights and their wardrobe. The program is followed by a hands-on children's activity during which children have the opportunity to create their own "space helmet."

Daily: "Space Ace"

Children ages 5-10 years old can earn a "Space Ace" certificate and a lithograph during their Visitor Center experience by completing an activity sheet.

The Visitor Center is open Thursday through Monday from 10 a.m. to 4 p.m. and is closed on Tuesday and Wednesday. For further information call x2298.

Oral Presentation Strategies

This course is open to a maximum of 12 employees whose duties include giving oral presentations. The course builds effective briefing and public speaking skills, and culminates in participants giving short, videotaped presentations. This course is designed for participants in the Professional Intern Program and other interested professionals.

DATES: April 19-21, 1999
TIME: 9 a.m. - 4 p.m. (18 hours — three 6-hour sessions)
LOCATION: Building E2
SUBMISSION DEADLINE: March 21, 1999
FUND SOURCE: Center

To enroll, forward a Training Request through your directorate. To obtain further information, contact Kimela Ouakil, x66-5087 or by e-mail: kouakil@pop100.gsfc.nasa.gov

STEAK DINNER

April 9, 7 p.m.
Bldg. F-3

Steak (grilled to order, Tossed Salad Baked Potato, Corn on the Cob, Bread, Dessert, Beverages

$15.00 per person

Tickets available March 25 from Sandy Gunter, Bldg. F-3, x1454and Pam Milbourne, Bldg. E-2, x2020

Career Counselor Available

Mac Saddoris, Career Counselor, will be available for career consultation at Wallops Flight Facility on March 24, 25 and 26. To make an appointment, call x66-5794 or leave a message at the MEC, Bldg. E-104 at x1015.

Women's History Month Presentation

"Companions on the Journey"

With
Sister Maura
McCartin

Brown Bag Lunch
March 25
11:30 a.m. - 1 p.m.

Williamsburg Room, Bldg. E-2. Call x1714 or x1145 to register.

GSFC's Quality Policy

With customer satisfaction as our primary goal:

**** GSFC is committed to meeting or exceeding our customer's requirements.***

**** We achieve excellence in all of our efforts.***

Easter Egg Hunt

March 27
10 a.m.
Bldg. F-3

Hot dogs, sodas, videos and prizes. Open to WEMA members. Children must be supervised, no drop-offs, please.

Contact Bev Hall, x1714 or Gerry McIntire, x1889. Sponsored by Morale Activities Committee. Rain date is April 3.

Sympathy is extended to the family and co-workers of Alan W. Revell who died March 17. Revell was an equipment operator in the Rigging Department for H&H Consolidated, Inc.

Wallops Shorts……..

Wallops Fire Department

Wallops Fire Department responded to the scene of a motor vehicle accident on the Chincoteague causeway on March 12. The mutual aid request for assistance was from Accomack County 911.

Wallops Emergency Medical Technicians responded to a mutual aid request from Accomack County 911 to assist with a medical emergency in Atlantic on March 18.

School Visits

Greg Waters, Electrical Systems Branch, spoke to 22 fifth grade students at Accomac Primary School about computer programming on March 12.

On March 19, **Phil Eberspeaker**, Carrier Systems Branch, participated in a student rocket outreach program at Penn State Univ. as a part of the SPIRIT mission presently scheduled for launch from Wallops Island in May.

Inside Wallops is an official publication of Goddard Space Flight Center and is published by the Wallops Office of Public Affairs, Extension 1584, in the interest of Wallops employees.

Editor — Betty Flowers
Photography — Optical Section
Printing — Printing Management Office